

Solar panels heat junior high school

By KATIE KERWIN

Bemis Elementary looks just like the two other Troy grade schools built at the same time: a low-slung, modern pale brick structure.

But unlike any other public school in Michigan, Bemis is heated by solar energy. Rows of collector panels on the roof soak up the sun's energy, using it to warm the building.

A grant from the federal Department of Energy covered \$206,000 of the \$249,000 solar collector's cost, said Gordon Andringa, auxiliary services director for Troy schools. The demonstration project is designed to "show publicly that solar energy works and encourage more people to use them (collectors) and more companies to make them," Andringa said.

"Our only obligation is to make the solar site available for viewing for five years."

One hundred sensing units throughout the school will measure energy usage and air and water temperatures every 36 seconds for the next five years. The federal government will monitor the solar collector's contribution to the school's energy supply.

ENERGY COSTS AT Bemis and its two non-solar sister schools can be

compared to measure the cost difference of solar and electrical systems. If the solar collector proves economical, those schools could be converted to take advantage of solar energy.

Slanting solar panels on the roof gather the sun's energy, warming water running through pipes inside the panels. Water is pumped up from a 50,000-gallon storage tank under the school.

Heat is transferred from the liquid in the panels to the storage water in a heat exchanger. Heat pumps then extract the heat from the storage water to heat classrooms.

An electric boiler provides back-up for a cloudy day. Either heating system can function alone or with the other.

"You don't even notice the difference," said Michael Williams, Bemis principal. "The boiler comes on automatically if the water temperature (from the solar panels) drops."

"It doesn't take awfully hot water," Williams said. "We can heat rooms off water 54-55 degrees."

On hot days, though, water from solar panel can be as hot as 240 degrees. The water is under pressure, so the boiling point is higher than normal.

FAILURE TO ADD anti-freeze to the liquid inside the panels last fall led to leaks in 66 of the system's 240 pan-



Solar panels behind these Bemis Junior High students heat their school. If the solar heating proves itself, two similar schools will be converted to take advantage of "free" heat from the sun. (Staff photo)

els. Only two-thirds of the system was operating last winter, as a result. So it was no surprise when energy savings were less than previously predicted, Andringa said.

Bemis used about 23 percent less electricity in the first month of winter than the other two schools. In the second heating month, Bemis used 13 percent less electricity. But because only part of the system was operating, it's difficult to analyze the collector's effectiveness, Andringa said.

"We expected 40 percent savings with the system fully in operation," he said. "It's hard to comment without all the panels working."

Based on 40 percent savings, he had calculated it would take 14 years for the solar collectors to pay off.

Detroit Edison electric company recently installed meters on the boilers to gauge the impact of the solar collector.

"WE'RE STILL KIND of groping to see how the system compares," Andringa said. Measuring only the electricity used by the boilers will eliminate any difference in the use of lights or other electrically-operated devices at the schools, which can confuse comparisons of entire electric bills, he said.

The district plans to replace all the leaky panels this summer, so the system can operate at full capacity next fall and winter. It operated for five weeks in spring 1979, and at partial capacity since October 1979.

Troy may also be the first school district to expand its solar program. But the delay in appraising the system will also postpone any decision about installing solar collectors at the two sister schools.

The district will examine at least a full year of comparative data before making that decision, Andringa said.

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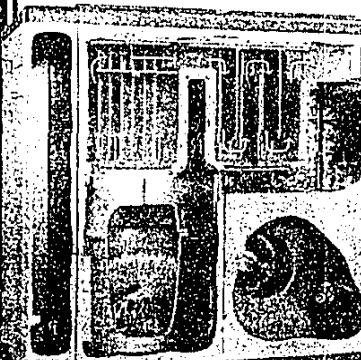
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